

## SEQUENCE LISTING

### (1) GENERAL INFORMATION:

- (i) APPLICANT: Jay A. Fishman
- (ii) TITLE OF INVENTION: MOLECULAR SEQUENCE OF SWINE RETROVIRUS  
AND METHODS OF USE
- (iii) NUMBER OF SEQUENCES: 74
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: LAHIVE & COCKFIELD, LLP
  - (B) STREET: 60 State Street
  - (C) CITY: Boston
  - (D) STATE: Massachusetts
  - (E) COUNTRY: USA
  - (F) ZIP: 02109-1875
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER:
  - (B) FILING DATE:
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 08/572,645
  - (B) FILING DATE: 14-DEC-1995
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Louis Myers
  - (B) REGISTRATION NUMBER: 35,965
  - (C) REFERENCE/DOCKET NUMBER: MGP-038CP
- (ix) TELECOMMUNICATION INFORMATION:
  - (A) TELEPHONE: (617)227-7400
  - (B) TELEFAX: (617)227-5941

### (2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 8060 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

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CCTTACTCTG TCAATAACCT CTCAGACTAA TGGTATGCGC ATAGGAGACA GCCTGAACTC	240
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CAACACTCAA GGGGAGGCTC CTTTAGGAAC CTGGTGGCCT GATCTATACG TTTGCCTCAG	360
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(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 7333 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

CTACCCCTGC GTGGTGTACG ACTGTGGGCC CCAGCGCGCT TGGGAATAAAA ATCCTCTTGC	60
TGTTTGCATC AAGACCGCTT CTTGTGAGTG ATTTGGGGTG TCGCCTCTTC CGAGCCCGGA	120
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TGACCCCTTA	TAAATTGCTC	TACGGGGGAC	CCCCCCGTT	GGCAGAAATT	GCCTTTGCAC	4560
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TGAGGCAGCG	AGCGTGGAAG	CAGCTCCGGG	AGGCCTACTC	AGGAGGAGAC	TTGCAAGTTC	4680
CACATCGCTT	CCAAGTTGGA	GATTCAGTCT	ATGTTAGACG	CCACCGTGCA	GGAAACCTCG	4740
AGACTCGGTA	GAAGGGACCT	TATCTCGTAC	TTTTGACCAC	ACCAACGGCT	GTGAAAGTCG	4800
AAGGAATCCC	CTTAAGCTTC	GCCTCCATCG	CGTGGTTCCCT	TACTCTGTCA	ATAACTCCTC	4860
AAGTTAATGG	TAAACGCCTT	GTGGACAGCC	CGAACTCCCA	TAAACCCCTTA	TCTCTCACCT	4920
GGTTACTTAC	TGACTCCGGT	ACAGGTATTA	ATATTAACAG	CACTCAAGGG	GAGGCTCCCT	4980
TGGGGACCTG	GTGGCCTGAA	TTATATGTCT	GCCTTCGATC	AGTAATCCCT	GGTCTCAATG	5040
ACCAGGCCAC	ACCCCCGAT	G TACTCCGTG	CTTACGGGTT	TTACGTTTGC	CCAGGACCCC	5100
CAAATAATGA	AGAATATTGT	GGAAATCCTC	AGGATTTCTT	TTGCAAGCAA	TGGAGCTGCA	5160
TAACTTCTAA	TGATGGGAAT	TGGAAATGGC	CAGTCTCTCA	GCAAGACAGA	GTAAGTTACT	5220
CTTTTGTTAA	CAATCCTACC	AGTTATAATC	AATTTAATTA	TGGCCATGGG	AGATGGAAAG	5280
ATTGGCAACA	GCGGGTACAA	AAAGATGTAC	GAAATAAGCA	AATAAGCTGT	CATTCGTTAG	5340
ACCTAGATTA	CTTAAAAATA	AGTTTCACTG	AAAAAGGAAA	ACAAGAAAAT	ATTCAAAAGT	5400

GGGTAAATGG TATATCTTGG GGAATAGTGT ACTATGGAGG CTCTGGGAGA AAGAAAGGAT	5460
CTGTTCTGAC TATTCGCCTC AGAATAGAAA CTCAGATGGA ACCTCCGGTT GCTATAGGAC	5520
CAAATAAGGG TTTGGCCGAA CAAGGACCTC CAATCCAAGA ACAGAGGCCA TCTCCTAACC	5580
CCTCTGATTA CAATACAACC TCTGGATCAG TCCCCACTGA GCCTAACATC ACTATTAAAA	5640
CAGGGGCGAA ACTTTTTTAGC CTCATCCAGG GAGCTTTTCA AGCTCTTAAC TCCACGACTC	5700
CAGAGGCTAC CTCTTCTTGT TGGCTTTGCT TAGCTTCGGG CCCACCTTAC TATGAGGGAA	5760
TGGCTAGAGG AGGGAAATTC AATGTGACAA AGGAACATAG AGACCAATGT ACATGGGGAT	5820
CCCAAAATAA GCTTACCCTT ACTGAGGTTT CTGAAAAGG CACCTGCATA GGGATGGTTC	5880
CCCCATCCCA CCAACACCTT TGTAACCACA CTGAAGCCTT TAATCGAACC TCTGAGAGTC	5940
AATATCTGGT ACCTGGTTAT GACAGGTGGT GGGCATGTAA TACTGGATTA ACCCCTTGTTG	6000
TTTCCACCTT GGTTTTCAAC CAACTAAAG ACTTTTGCCT TATGGTCCAA ATTGTCCCCC	6060
GGGTGTACTA CTATCCCGAA AAAGCAGTCC TTGATGAATA TGA CTATAGA TATAATCGGC	6120
CAAAAAGAGA GCCCATATCC CTGACACTAG CTGTAATGCT CGGATTGGGA GTGGCTGCAG	6180
GCGTGGGAAC AGGAACGGCT GCCCTAATCA CAGGACCGCA ACAGCTGGAG AAAGGACTTA	6240
GTAACCTACA TCGAATTGTA ACGGAAGATC TCCAAGCCCT AGAAAAATCT GTCAGTAACC	6300
TGGAGGAATC CCTAACCTCC TTATCTGAAG TGGTTCTACA GAACAGAAGG GGGTTAGATC	6360
TGTTATTTCT AAAAGAAGGA GGGTTATGTG TAGCCTTAAA AGAGGAATGC TGCTTCTATG	6420
TAGATCACTC AGGAGCCATC AGAGACTCCA TGAGCAAGCT TAGAGAAAGG TTAGAGAGGC	6480
GTCGAAGGGA AAGAGAGGCT GACCAGGGGT GGTTTGAAGG ATGGTTCAAC AGGTCTCCTT	6540
GGATGACCAC CCTGCTTTCT GCTCTGACGG GGCCCCTAGT AGTCCTGCTC CTGTTACTTA	6600
CAGTTGGGCC TTGCTTAATT AATAGGTTTG TTGCCTTTGT TAGAGAACGA GTGAGTGCAG	6660
TCCAGATCAT GGTACTTAGG CAACAGTACC AAGGCCTTCT GAGCCAAGGA GAAACTGACC	6720
TCTAGCCTTC CCAGTTCTAA GATTAGA ACT ATTAACAAGA CAAGAAGTGG GGAATGAAAG	6780
GATGAAAATG CAACCTAACC CTCCCAGAAC CCAGGAAGTT AATAAAAAGC TCTAAATGCC	6840
CCCGAATTCC AGACCCTGCT GGCTGCCAGT AAATAGGTAG AAGGTCACAC TTCCTATTGT	6900
TCCAGGGCCT GCTATCCTGG CCTAAGTAAG ATAACAGGAA ATGAGTTGAC TAATCGCTTA	6960
TCTGGATTCT GTAAAACTGA CTGGCACCAT AGAAGAATTG ATTACACATT GACAGCCCTA	7020
GTGACCTATC TCAACTGCAA TCTGTCACCTC TGCCCAGGAG CCCACGCAGA TGCGGACCTC	7080
CGGAGCTATT TTAAATGAT TGGTCCACGG AGCGCGGGCT CTCGATATTT TAAATGATT	7140

GGTCCATGGA GCGCGGGCTC TCGATATTTT AAAATGATTG GTTTGTGACG CACAGGCTTT	7200
GTTGTGAACC CCATAAAAGC TGTCCCGATT CCGCACTCGG GGCCGCAGTC CTCTACCCCT	7260
GCGTGGTGTA CGACTGTGGG CCCCAGCGCG CTTGGAATAA AAATCCTCTT GCTGTTTGCA	7320
TCAAAAAAAAA AAA	7333

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 8132 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GCGTGGTGTA CGACTGTGGG CCCCAGCGCG CTTGGAATAA AAATCCTCTT GCTGTTTGCA	60
TCAAGACCGC TTCTCGTGAG TGATTAAGGG GAGTCGCCTT TTCCGAGCCT GGAGGTCTT	120
TTTGCTGGTC TTACATTGG GGGCTCGTCC GGGATCTGTC GCGGCCACCC CTAACACCCG	180
AGAACCGACT TGGAGGTAA AAGGATCCTC TTTTAAACGT GTATGCATGT ACCGGCCGGC	240
GTCTCTGTTT TGAGTGTCTG TTTTCAGTGG TGC GCGCTTT CGGTTTGCAG CTGTCCTCTC	300
AGGCCGTAAG GGCTGGGGGA CTGTGATCAG CAGACGTGCT AGGAGGATCA CAGGCTGCTG	360
CCCTGGGGGA CGCCCCGGA GGTGAGGAGA GCCAGGGACG CCTGGTGGTC TCCTACTGTC	420
GGTCAGAGGA CCGAATTCTG TTGCTGAAGC GAAAGCTTCC CCCTCCGCGA CCGTCCGACT	480
CTTTTGCCCTG CTTGTGGAAG ACGTGGACGG GTCACGTGTG TCTGGATCTG TTGGTTTCTG	540
TTTTGTGTGT CTTTGTCTTG TGTGTCCTTG TCTACAGTTT TAATATGGGA CAGACGGTGA	600
CGACCCCTCT TAGTTTGA CTGACCATTT GGACTGAAGT TAAATCCAGG GCTCATAATT	660
TGTCAGTTCA GGTAAAGAAG GGACCTTGGC AGACTTTCTG TGTCTCTGAA TGGCCGACAT	720
TCGATGTTGG ATGGCCATCA GAGGGGACCT TTAATTCTGA GATTATCCTG GCTGTAAAG	780
CAGTTATTTT TCAGACTGGA CCCGGCTCTC ATCCCGATCA GGAGCCCTAT ATCCTTACGT	840
GGCAAGATTT GGCAGAGGAT CCTCCGCCAT GGGTTAAACC ATGGCTGAAT AAGCCAAGAA	900
AGCCAGGTCC CCGAATTCTG GCTCTTGGAG AGAAAAACAA AACTCGGCT GAAAAAGTCA	960
AGCCCTCTCC TCATATCTAC CCCGAGATTG AGGAGCCACC GGCTTGCCG GAACCCCAAT	1020

CTGTTCCCCC	ACCCCCTTAT	CTGGCACAGG	GTGCCGCGAG	GGGACCCTTT	GCCCCCTCCTG	1080
GAGCTCCGGC	GGTGGAGGGA	CCTGCTGCAG	GGACTCGGAG	CCGGAGGGGC	GCCACCCCGG	1140
AGCGGACAGA	CGAGATCGCG	ACATTACCGC	TGCGCACGTA	CGGCCCTCCC	ACACCGGGGG	1200
GCCAATTGCA	GCCCCCTCAG	TATTGGCCCT	TTTCTTCTGC	AGATCTCTAT	AATTGGAAAA	1260
CTAACCATCC	CCCTTTCTCG	GAGGATCCCC	AACGCCTCAC	GGGGTTGGTG	GAGTCCCTTA	1320
TGTTCTCTCA	CCAGCCTACT	TGGGATGATT	GTCAACAGCT	GCTGCAGACA	CTCTTCACAA	1380
CCGAGGAGCG	AGAGAGAATT	CTATTAGAGG	CTAGAAAAAA	TGTTCTTGGG	GCCGACGGGC	1440
GACCCACGCG	GTTGCAAAAT	GAGATTGACA	TGGGATTTCC	CTTAACTCGC	CCCGGTTGGG	1500
ACTACAACAC	GGCTGAAGGT	AGGGAGAGCT	TGAAAATCTA	TCGCCAGGCT	CTGGTGGCGG	1560
GTCTCCGGGG	CGCCTCAAGA	CGGCCCCACTA	ATTTGGCTAA	GGTAAGAGAA	GTGATGCAGG	1620
GACCGAATGA	ACCCCCCTCT	GTTTTTCTTG	AGAGGCTCTT	GGAAGCCTTC	AGGCGGTACA	1680
CCCCTTTTGA	TCCCACCTCA	GAGGCCCAAA	AAGCCTCAGT	GGCTTTGGCC	TTTATAGGAC	1740
AGTCAGCCTT	GGATATTAGA	AAGAAGCTTC	AGAGACTGGA	AGGGTTACAG	GAGGCTGAGT	1800
TACGTGATCT	AGTGAAGGAG	GCAGAGAAAG	TATATTACAA	AAGGGAGACA	GAAGAAGAAA	1860
GGGAACAAAG	AAAAGAGAGA	GAAAGAGAGG	AAAGGGAGGA	AAGACGTAAT	AAACGGCAAG	1920
AGAAGAATTT	GACTAAGATC	TTGGCTGCAG	TGGTTGAAGG	GAAAAGCAAT	ACGGAAAGAG	1980
AGAGAGATTT	TAGGAAAATT	AGGTCAGGCC	CTAGACAGTC	AGGGAACCTG	GGCAATAGGA	2040
CCCCACTCGA	CAAGGACCAA	TGTGCATATT	GTAAAGAAAG	AGGACACTGG	GCAAGGAACT	2100
GCCCCAAGAA	GGGAAACAAA	GGACCAAGGA	TCCTAGCTCT	AGAAGAAGAT	AAAGATTAGG	2160
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CAGTTGAGTT	CCTGGTTGAT	ACCGGAGCGA	AACATTGAGT	GCTACTACAG	CCATTAGGAA	2280
AACTAAAAGA	TAAAAAATCC	TGGGTGATGG	GTGCCACAGG	GCAACAACAG	TATCCATGGA	2340
CTACCCGAAG	AACAGTTGAC	TTGGGAGTGG	GACGGGTAAC	CCACTCGTTT	CTGGTCATAC	2400
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TCCAATTAGA	TGACGAATAT	CGACTATACT	CTCCCCTAGT	AAAGCCTGAT	CAAAATATAC	2580
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AGTACCCCTT	GAGTAAAGAA	GCTCAAGAAG	GAATTCGGCC	GCATGTCCAA	AGATTAATCC	2760

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CTAGCCAACC	ACTTTTTGCC	TTCGAATGGA	GAGATCCAGG	TACGGGAAGA	ACCGGGCAGC	3060
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CTGACAAATT	GACTTTGGGA	CAGAATATAA	CTGTAATAGC	CCCCCATGCA	TTGGAGAACA	3840
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TGCTTCTCAC	AGAGAGGGTC	ACGTTGCTC	CACCAGCCGC	TCTCAACCCT	GCCACTCTTC	3960
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TCATGGCCCT	CACGCAAGCT	TTGCGGCTGG	CCGAAGGGAA	ATCCATAAAC	ATTTATACGG	4260
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AGATACATCG TCTAACCAC CTAGGAACTA AACACCTGCA GCAGTTGGTC AGAACATCCC	4740
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ACCCAGGCGC TCACTGGGAA GTGGACTTCA CTGAGGTAAA GCCGGCTAAA TACGGAAACA	4920
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AAGAGACTTC AACCGTGGTG GCTAAAAAAA TACTGGAAGA AATTTTTCCA AGATTTGGAA	5040
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GGTATTAATA TCAACAACAC TCAAGGGGAG GCTCCTTTAG GAACCTGGTG GCCTGATCTA	5880
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TCAGACCCCA CTGAGTCTAA CAGCACGACT AAAATGGGGG CAAAACTTTT TAGCCTCATC	6480
CAGGGAGCTT TTCAAGCTCT TAACTCCACG ACTCCAGAGG CTACCTCTTC TTGTTGGCTA	6540
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GTTTCTGGAA AAGGCACCTG CATAGGAAAG GTTCCCCCAT CCCACCAACA CCTTTGTAAC	6720
CACACTGAAG CCTTTAATCA AACCTCTGAG AGTCAATATC TGGTACCTGG TTATGACAGG	6780
TGGTGGGCAT GTAATACTGG ATTAACCCCT TGTGTTTCCA CCTTGGTTTT TAACCAAACCT	6840
AAAGATTTTT GCATTATGGT CCAAATTGTT CCCCAGAGTG ATTACTATCC CGAAAAAGCA	6900
ATCCTTGATG AATATGACTA CAGAAATCAT CGACAAAAGA GAGAACCCAT ATCTCTGACA	6960
CTTGCTGTGA TGCTCGGACT TGGAGTGGCA GCAGGTGTAG GAACAGGAAC AGCTGCCCTG	7020
GTCACGGGAC CACAGCAGCT AGAAACAGGA CTTAGTAACC TACATCGAAT TGTAACAGAA	7080
GATCTCCAAG CCCTAGAAAA ATCTGTCAGT AACCTGGAGG AATCCCTAAC CTCCTTATCT	7140
GAAGTAGTCC TACAGAATAG AAGAGGGTTA GATTTATTAT TTCTAAAAGA AGGAGGATTA	7200
TGTGTAGCCT TGAAGGAGGA ATGCTGTTTT TATGTGGATC ATTCAGGGGC CATCAGAGAC	7260
TCCATGAACA AGCTTAGAGA AAGGTTGGAG AAGCGTCGAA GGGAAAAGGA AACTACTCAA	7320
GGGTGGTTTG AGGGATGGTT CAACAGGTCT CTTTGGTTGG CTACCCTACT TTCTGCTTTA	7380
ACAGGACCCT TAATAGTCCT CTCCTGTTA CTCACAGTTG GGCCATGTAT TATTAACAAG	7440
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TACCAAAGCC CGTCTAGCAG GGAAGCTGGC CGCTAGCTCT ACCAGTTCTA AGATTAGAAC	7560
TATTAACAAG AGAAGAAGTG GGAATGAAA GGATGAAAAT ACAACCTAAG CTAATGAGAA	7620
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CTGTTTTAAA ATATGCGGAA GTAAAATAGG CCCTGAGTAC ATGTCTCTAG GCATGAAACT	7740
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AAAATCCTCT TGCTGTTTGC ATCAAAAAAA AA	8132

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

TGCCTAGAGA CATGTACTC	19
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(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CCTCTTCTAG CCATTCCTTC A	21
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(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

TCGAGACTCG GTGGAAGGGC CC	22
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(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear



(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GGGCCCTTCC ACCGAGTCTC GA

22

(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

ACCTGGATCC ATGCATCCCA CG

22

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

CGTGGGATGC ATGGATCCAG GT

22

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GGCGCCACCT CCCGATTCGG

20

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

CCGAATCGGG AGGTGGCGCC

20

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

TCCCCTTAAG CTTCGCCTCC

20

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

GGAGGCGAAG CTTAAGGGGA

20

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

AAAAGCACAA AGGGCAGGAG AGC

23

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GCTCTCCTGC CCTTTGTGCT TTT

23

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

CCTTTAGGAA CCTGGTGGCC

20

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

GGCCACCAGG TTCCTAAAGG

20

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

CCCCCAGATA TCCTCCATGC

20

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

GCATGGAGGA TATCTGGGGG

20

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

GCAGTTTCCA ATCAATCCCC AA

22

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

TTGGGGATTG ATTGGAACT GC

22

(2) INFORMATION FOR SEQ ID NO:22:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

TTTATGTTTG CCCAGGACCA CCA

23

(2) INFORMATION FOR SEQ ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

TGGTGGTCCT GGGCAAACAT AAA

23

(2) INFORMATION FOR SEQ ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

GGGAGGTGGC GCCGGCTTAA CGT

23

(2) INFORMATION FOR SEQ ID NO:25:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

ACGTTAAGCC GCGCCACCT CCC

23

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

CCCCCAACCC AAGGACCAGG ACCA

24

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

TGGTCCTGGT CCTTGGGTTG GGGG

24

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

GCAGCACGAC TAAAATGGGG GC

22

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

GGCCCCATTT TAGTCGTGCT GC

22

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

CCCCCATCCC ACCAACACCT

20

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

AGGTGTTGGT GGGATGGGGG

20

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

TCTCCCCCAC CCCGAAACAT

20

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

ATGTTTCGGG GTGGGGGAGA

20

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 24 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

AGCCAAGAAA GCCAGGTCCC CGAA

24

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 24 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

TTCGGGGACC TGGCTTTCTT GGCT

24

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear



(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

AGGCTCTGGT GCGGGTCTC C

21

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GGAGACCCGC CACCAGAGCC T

21

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

CCGCAGGGAT GGGTTTGGCA

20

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

TGCCAAACCC ATCCCTGCGG

20

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GCTCACCTGG ACCCGACTGC CC

22

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GGGCAGTCGG GTCCAGGTGA GC

22

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 24 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GTTTACGGGA CGGGCAGCGA TGGC

24

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 24 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GCCATCGCTG CCCGTCCCGT AAAC

24

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 26 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

TGGCTGGGGC GCGGTGGTG GACGGG

26

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 26 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

CCCGTCCACC ACCGCCGCC CAGCCA

26

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GCCCAAAGCC CCAGAACCCA GACG

24

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

CGTCTGGGTT CTGGGGCTTT GGGC

24

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

GATGAACAGG CAGACATCTG

20

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

CGCTTACAGA CAAGCTGTGA

20

(2) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

AGAACAAAGG CTGGGAAGC

19

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

ATAGGAGACA GCCTGAACTC

20

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

GGACCATTGT CTGACCCTAT

20

(2) INFORMATION FOR SEQ ID NO:53:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

GTCAACACCT ATACCAGCTC

20

(2) INFORMATION FOR SEQ ID NO:54:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

CATCTGAGGT ATAGCAGGTC

20

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

GCAGGTGTAG GAACAGGAAC

20

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

ACCTGTTGAA CCATCCCTCA

20

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

CGAATGGAGA GATCCAGGTA

20

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

CCTGCATCAC TTCTCTTACC

20

(2) INFORMATION FOR SEQ ID NO:59:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

TTGCCTGCTT GTGGAATACG

20

(2) INFORMATION FOR SEQ ID NO:60:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

CAAGAGAAGA AGTGGGGAAT G

21

(2) INFORMATION FOR SEQ ID NO:61:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

CACAGTCGTA CACCACGCAG

20

(2) INFORMATION FOR SEQ ID NO:62:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

GGGAGACAGA AGAAGAAAGG

20

(2) INFORMATION FOR SEQ ID NO:63:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

CGATAGTCAT TAGTCCCAGG

20

(2) INFORMATION FOR SEQ ID NO:64:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

TGCTGGTTTG CATCAAGACC G

21

(2) INFORMATION FOR SEQ ID NO:65:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear



(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

GTCGCAAAGG CATACTGCT

20

(2) INFORMATION FOR SEQ ID NO:66:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

ACAGAGCCTC TGCTAAGAAG

20

(2) INFORMATION FOR SEQ ID NO:67:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

GCAGCTGTTG ACAATCATC

19

(2) INFORMATION FOR SEQ ID NO:68:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

TATGAGGAGA GGGCTTGACT

20

(2) INFORMATION FOR SEQ ID NO:69:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

AGCAGACGTG CTAGGAGGT

19

(2) INFORMATION FOR SEQ ID NO:70:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

TCCTCTTGCT GTTTGCATC

19

(2) INFORMATION FOR SEQ ID NO:71:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

CAGACACTCA GAACAGAGAC

20

(2) INFORMATION FOR SEQ ID NO:72:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

ACATCGTCTA ACCCACCTAG

20

(2) INFORMATION FOR SEQ ID NO:73:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

CTCGTTTCTG GTCATACCTG A

21

(2) INFORMATION FOR SEQ ID NO:74:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

GAGTACATCT CTCTAGGCA

19